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The Application and Effects of Stress-Reducing Activities in a Post-Secondary Learning Environment

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Abstract

Stress is an emotional imbalance which may occur due to several reasons such as tests, papers and projects, etc. Cognitive symptoms of stress include confusion, poor concentration, poor attention, and problem-solving disabilities. The purpose of the research project is to incorporate short-length activities in the classroom that are meant to solely reduce the students' stress levels. Jotform, a survey website, was utilized to gauge the stress levels of students after they'd actively participated in the project for that day. Students performed a 2–5-minute stress-reducing activity in the middle of the class period and then completed the Jotform stress survey after class. A control day was also conducted that included students not performing any activities that day and then completing the survey after class. This project was conducted for a period of one academic quarter. Results favored the use of stress ball squeezing being effective compared to jigsaw puzzle-solving.

Key Indexing Terms: -- MeSH Terms --, Students, Cognition, Schools, Attention, Employment Ranidae, -- Relevant MeSH Terms --, Humans, Animals

1. Introduction

Post-secondary educational institutions possess various incorporated systems. These systems can range from financial assistance, student advisement, educational progression, to successfully completing licensed based examinations. A student balancing these systems is not an easy feat as it requires adapting to changes, learning numerous concepts, and taking numerous assessments. Stress is an emotional imbalance which may occur due to several reasons such as tests, papers and projects, competitive nature within one's chosen field, financial worries about school and future employment prospects (Rana et al, 2019). These physical and mental tasks require recruiting the sympathetic nervous system in a consistent manner and in different gradients. The sympathetic nervous system, also known as the "fight or flight" system, involves a sequence of physiological reactions that helps the body deal with stress. The classroom is one of the environments where students experience a great amount of this stress. Research has shown that symptoms of anxiety and stress are more prevalent with moderate to extremely severe ranges than depression according to a 2020 study (Asif et al, 2020). Stress can not only be experienced from an educational perspective in the classroom but also from a social perspective as well. Stress levels can also worsen when there are external stressors included such as family issues, financial difficulties, vehicular problems, and other types. Stress experienced for a prolonged period is called chronic stress and possesses various symptoms (Rana et al, 2019). Specifically, academic stress in college is significantly correlated to psychological well-being in students according to a 2022 study (Barbayannis et al, 2022).

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Cognitive symptoms of stress include confusion, poor attention, poor decision-making abilities, heightened or lowered alertness, poor concentration, memory problems, and poor problem-solving ability (Rana et al, 2019). These symptoms can be hindering in an environment that requires the student's optimal concentration and energy usage to accomplish important tasks. Therefore, stress management seems crucial for both improving health and well-being and successfully performing tasks (Leon-Perez et al, 2021).

The purpose of the research project is to apply activities that can lessen students' stress levels in the classroom. The activities are short-length and have no relation to the subject material. These hands-on activities are meant to solely reduce the students' stress levels. The two activities, stress ball squeezing and brain teaser puzzles, have been used in past research projects to determine their effectiveness on stress and cognitive abilities.

Stress balls have been used by the public for the purpose of reducing stress. Reports have revealed the scientific applications of this gadget, and many people widely use it during their working hours and leisure hours as well (Srivarsan et al, 2021). "In a study of hemodialysis patients, the mean stress score of the experimental group decreased significantly, while the stress score of the control groups increased (Kasar et al, 2019)." In a 2022 research study where 32 adolescent patients were given stress balls to squeeze during a blood draw procedure with a needle, a patient selected pain and fear scale revealed lower levels upon the procedure (Cirik et al, 2022). Another study which is first known to investigate the effect of using a stress ball on pain and anxiety during a wound care procedure involving scalpels, found diverting patients' attention by using a stress ball to be an effective method to reduce the level of pain and anxiety that occurred during the procedure (Aslan et al, 2025).

Brain teaser puzzles such as jigsaw puzzles have been used specifically for cognitive aging. Jigsaw puzzling may provide two active ingredients (effective features) that benefit cognition: first, process-specific cognitive demands of jigsaw puzzling could contribute to an increased brain, and second, regulation of distressing emotions through jigsaw puzzling could prevent chronic stress states that can exert a negative impact on cognitive aging and dementia in the long term (Fissler et al, 2018). In a 2022 study, findings revealed that salivary cortisol (a stress hormone) and alpha amylase were significantly reduced after playing a puzzle game (Aliyari et al, 2022). Jigsaw puzzling could contribute as an unharmful distraction from the classroom subject material as well as serve to improved cognitive function.

2. Method

An X-ray Physics class in a chiropractic program participated in the research project. This class was led by two instructors who volunteered to oversee the research activities administered during the project. During this 11-week course that met 3 days out of the week, the class is held for a total of an hour and fifty minutes per day. The project was conducted for 3 days total. These three days were dispersed for one day per week on weeks 3, 5, and 6.

Stress-reducing activities were administered to students in weeks 3 and 5 (the Monday of those weeks). Class was held for the first 50 minutes, then the students were administered the activity that lasted for a maximum of 8 minutes, the remainder of class resumed, and then students were sent a stress-level survey to complete after class. Monday of week 6 served as a control day, in which students didn't participate in a stress-reducing activity but still participated in completing a stress-level survey after class. Survey questions were created on an online survey platform called Jotform by the project coordinator. The project coordinator also administered and collected the survey questions for data analysis.

2.1: Week 3: Stress Ball Squeezing

After the first 50 minutes of class time, the instructor posted the instructions for the stress ball squeezing activity on the projector screen and read them to the class. The students were then given the stress balls for the commencement of the activity. For the first 3 minutes, students squeezed their stress balls while socializing with other students. They could use any hand to participate in the activity and could even switch hands if they desired to do so. For the remaining 2 minutes, students squeezed the stress balls with minimal conversation. Students were also encouraged to make a mental note of their stress levels during the two types of stress ball squeezing time periods (with conversation and with minimal conversation). Class then resumed after the activity. Students were then sent a 9-question online survey to complete. This survey was created and sent through the Jotform online platform. The survey questions were specific to the stress-ball activity and survey answers were sent to the project coordinator anonymously.

2.2: Week 5: Brain Teaser Puzzle Activity

After the first 50 minutes of class time, the instructor posted the instructions for the brain-teaser puzzle activity on the projector screen and read them to the class. The students then selected a brain-teaser puzzle and a corresponding folded paper with puzzle directions typed and illustrated on the inside (students were not able to see these puzzle directions). Some puzzles were wooden, and some puzzles were metal. The puzzles were assembled configurations that were meant to be disassembled and then reassembled. Each puzzle was different for each student and presented with a complex configuration that required careful dismantling and equally thoughtful rebuilding.

For the first 5 minutes, students were to solve their respective puzzles without the help of their paper instructions (folded). After the initial 5 minutes, students were given an additional 2 minutes to solve the puzzle with the paper instructions. The paper instructions displayed how to dissemble and reassemble their selected puzzles. After the activity, class then resumed. Students were then sent an 8-question survey to complete through the Jotform online platform.

2.3: Week 6: Control Day, Stress-Level Survey Only

No stress-reducing activity was administered on this day. Students sat for a regular day of class and were then given a stress-level survey to complete after class through the Jotform online platform. The survey consisted of 4 questions. This day served as a control day.

3. Results

3.1: Stress Ball Squeezing Activity

17 students completed the stress level survey related to this activity. 12 students (70.5%) found that the activity was more helpful with conversation. When students were asked to rate their stress levels at the beginning of class and again after completing the stress reducing activity, 13 students (76%) selected a lesser stress level after completing the stress ball squeezing activity. When students were asked directly if the stress ball squeezing activity lessened, worsened or if their levels remained the same since the start of class, 8 students (47%) found that their stress levels improved after completing the activity. When students were asked if the stress ball squeezing activity improved their overall classroom experience, (88%) answered yes. When students were asked if the stress ball squeezing activity reduced their stress levels in class that day, 16 students (94.11%) said yes. When students were asked to select reason(s) why they were stressed at the beginning of class, 12 students (70.5%) selected that their stress was university related.

3.2: Brain Teaser Puzzle Activity

13 students completed the stress level survey related to this activity. When students were asked to rate their stress levels at the beginning of class and again after completing the stress reducing activity, 4 students (30.7%) selected a lesser stress level after completing the brain teaser puzzle. When students were asked if their stress levels improved, remained the same, or worsened since the start of class, 5 students (38%) found that their stress levels improved. When students were asked if the brain teaser puzzle activity improves their overall classroom experience, 7 students (53.8%) selected yes. When students were asked if the brain teaser puzzle activity reduced their stress levels in class that day, 8 students (61.5%) selected no. Students were also asked to select reason(s) why they were stressed at the beginning of class and 11 students (84.6%) found that their stress was university related.

3.3: No Activity Day/Control Day

12 students completed the stress level survey related to this day. When students were asked to rate their stress levels at the beginning of class and again after completing the stress reducing activity, 11 students (91%) selected the same stress level. Students were also asked to select reason(s) why they were stressed at the beginning of class and 9 students (75%) selected that their stress was university related.

4. Discussion

The brain teaser puzzle required a lot more steps during participation and posed more difficult to students because of disassembly and reassembly. These factors most likely contributed towards the attenuated effectiveness of the activity on the students' stress levels. Students were given the opportunity to write comments regarding the activity and one of the responses that directly addressed the puzzle activity was "the puzzle took a lot of brain power and didn't necessarily help alleviate my stress levels."

5. Conclusion

Survey results for the stress ball squeezing activity concluded that most students in the classroom found the activity more beneficial when accompanied by conversation. Students seemed to experience less stress after completing the stress ball squeezing activity in comparison to the brain teaser activity. The overall results show that the stress ball squeezing activity was effective in reducing student's stress levels in the classroom when compared to the brain teaser activity. This effectiveness of the stress ball squeezing activity was sound when compared to the control day where students stress levels mostly remained the same. Survey results for the 3 days (control day included) concluded that students' stress levels were mostly university related.

6. References

1. Aslan, Fatma; Tosun, Betul; Ersoy, Nese; Ozen, Nurten. The Effect of a Stress Ball on Pain and Anxiety During Sharp Debridement in Patients With Diabetic Foot Ulcers: A Randomized Controlled, Single-Blind Study. Journal of Tissue Viability, Jan 2025; (34) 2; DOI: https://doi.org/10.1016/j.tv.2025.100861
2. Apaydin-Cirik, Vildan; Sonay-Turkmen, Ayse; Ayaz, Merih. Effectiveness of Stress Ball and Relaxation Exercises on Polymerase Chain Reaction (RRT-PCR) Test-Induced Fear and Pain in Adolescents in Turkiye. Journal of Pediatric Nursing, Dec 2022; DOI: https://doi.org/10.1016/j.pedn.2022.12.001
3. Aliyari, H; Golabi, S; Sahraei, H; Daliri, M R; Minaei-Bidgoli B; Tadayyoni H; Kazemi, M. Evaluation of Stress and Cognition Indicators in a Puzzle Game: Neuropsychological, Biochemical and Electrophysiological Approaches. Archives of Razi Institute. Aug 2022; 77(4): 1397-1403. DOI: 10.22092/ARI.2021.356500.1855
4. Barbayannis, Georgia; Bandari, Mahindra; Zheng, Xiang; Baquerizo, Humberto; Pecor, Keith; Ming, Xue. Academic Stress and Mental Well-Being in College Students: Correlations, Affected Groups, and COVID-19. Frontiers in Psychology, May 2022; DOI: 10.3389/fpsyg.2022.886344
5. Srivarsan, R., Sridevi, G. and Preetha, S. "An Evaluation on Use of Stress Ball Exercise on Stress Management among Student Population – A Cross Section Study", Journal of Pharmaceutical Research International, 2021; 33(47B), pp. 506–514. doi: 10.9734/jpri/2021/v33i47B33150 .
6. Leon-Perez, Jose; Cantero-Sanchez, Francisco; Fernandez-Canseco, Angela; Leon-Rubio, Jose. Effectiveness of a Humor-Based Training for Reducing Employees' Distress. International Journal of Environmental Research and Public Health, Nov 2021; 18(21) doi: 10.3390/ijerph182111177
7. Sayin-Kasar, Kadriye; Erzincanli, Saadet; Tolga-Akbas, Nesat. The Effect of a Stress Ball on Stress, Vital Signs and Patient Comfort in Hemodialysis Patients: A Randomized Controlled Trial. Complementary Therapies in Clinical Practice, Nov 2020; Volume 41 doi: https://doi.org/10.1016/j.ctcp.2020.101243
8. Asif, Saba; Mudassar, Azka; Shazad, Talala; Raouf, Mobeen; Pervaiz, Tehmina. Frequency of Depression, Anxiety and Stress Among University Students. Pakistan Journal of Medical Sciences, Jul 2020; 36(5): 971-976. DOI: 10.12669/pjms.36.5.1873
9. Anjali Rana, Renu Gulati, Veenu Wadhwa. Stress among students: An emerging issue. Integrated Journal of Social Sciences, 2019; 6(2)
10. Patrick Fissler, Olivia Caroline Kuster, Daria Laptinskaya, Laura Sophia Loy, Christine A. F. Von Arnim, Iris-Tatjana Kolassa. Jigsaw Puzzling Taps Multiple Cognitive Abilities and Is a Potential Protective Factor for Cognitive Aging. Frontiers in Aging Neuroscience, 2018; 10:299 doi: 10.3389/fnagi.2018.00299

Table 1: Stress ball activity (n = 17)	
Which segment of the stress ball squeezing activity was more helpful?	
• With conversation	12 (70.5%)
• With minimal conversation	3 (17.6%)
• Both options selected	1 (5.8%)
• No response	1 (5.8%)
Stress level at the end of class, as compared to the beginning of class:	
• Lesser stress level	13 (76%)
• Same stress level	3 (17.6%)
• Worsened stress level	1 (5.8%)
When students were asked directly about the stress ball squeezing activity:	
• stress levels improved after completing the activity	8 (47.1%)
• stress levels remained the same	8 (47.1%)
• the activity worsened their stress level	1 (5.8%)
Did the stress ball squeezing activity improve your overall classroom experience?	
• Yes	15 (88.2%)
• No	2 (11.7%)
Did the stress ball squeezing activity reduce your stress levels in class?	
• Yes	16 (94.1%)
• No	1 (5.8%)
Reason(s) why they were stressed at the beginning of class:	
• University related	12 (70.5%)
• Relationship related	1 (5.8%)
• Financially related	1 (5.8%)
• Other reasons	2 (11.7%)
• No response	1 (5.8%)

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Sincerely,

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